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United States Patent [19]

Midha et al.

[11] **Patent Number:** 5,649,454[45] **Date of Patent:** Jul. 22, 1997[54] **COMPLIANT CONSTANT-FORCE
MECHANISM AND DEVICES FORMED
THEREWITH**[75] **Inventors:** Ashok Midha, West Lafayette; Morgan
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Corporation, Kokomo, both of Ind.[21] **Appl. No.:** 441,244[22] **Filed:** May 15, 1995[51] **Int. Cl.⁶** G05G 1/04[52] **U.S. Cl.** 74/520; 267/160[58] **Field of Search** 74/520, 106; 248/280.11,
248/292.11; 267/160, 133, 185[56] **References Cited****U.S. PATENT DOCUMENTS**

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[57]

ABSTRACT

A compliant mechanism is configured to generate a substan-
tially constant output force in response to an input in the
form of a linear displacement. The compliant mechanism is
a slider mechanism whose members and their interconnects
cooperate to generate a biasing force that causes the slider
mechanism to generate a substantially constant output force
that is substantially parallel to the linear path of a recipro-
cable member in response to the displacement of the recipro-
cable member along the linear path. To achieve the above
functional characteristics, the slider mechanism is composed
of structural elements, one or more of which is compliant.

32 Claims, 5 Drawing Sheets